

CLAIMS

What is claimed is:

1. A method for transmitting data symbols in a CDMA communication system including a transmitter having an antenna array and a receiver, the method comprising the steps of:

generating a first and second data field of symbols;

encoding said first and second data field producing complex conjugates of the symbols of said first and second data field;

transmitting from the said transmitter a first communication burst including said first and second data fields separated by a midamble over a first antenna and a second communication burst produced using said complex conjugates of said first and second data fields separated by a midamble over a second antenna; and

receiving and decoding at said receiver said first and second communication bursts to recover said first and second data fields.

2. The method of claim 1 wherein said encoding includes producing the negation of said complex conjugates of said second data field symbols.

3. The method of claim 2 further comprising the step of generating said first and second communication burst wherein said first communication burst comprises said first data field followed by said first burst midamble followed by said second data field; and

said second communication burst comprises said negative complex conjugate of said second data field followed by said second burst midamble followed by said complex conjugate of said first data field.

4. The method of claim 3 wherein said receiving and decoding step comprises:
estimating a channel response of said first and second communication bursts using
said bursts' midambles; and

detecting the symbols of said first and second communication bursts in response to
said channel response.

5. The method of claim 4 wherein a base station includes said receiver and a user
equipment includes said transmitter.

6. The method of claim 4 wherein a user equipment (UE) includes said receiver
and a base station includes said transmitter.

7. A CDMA communication system including a base station and a user equipment
(UE), comprising:

an encoder which encodes a first and second data field of symbols to produce complex
conjugates of the symbols of said first and second data fields;

a first and second antenna of a transmitter which transmits RF signals including a first
and second communication burst, wherein said first communication burst including said first
and second data fields separated by a midamble is transmitted by said first antenna and said
second communication burst produced using said complex conjugates of said first and second
data fields separated by a midamble is transmitted by said second antenna; and

a receiver comprising a decoder which decodes said RF signals to recover said first
and second data fields.

8. The system of claim 7 wherein said encoder negates said complex conjugate of
said second data field.

9. The system of claim 8 wherein said transmitter further comprises:

a first burst generator, associated with said first antenna, which generates a first communication burst including said first data field followed by said first burst midamble followed by said second data field; and

a second burst generator, associated with said second antenna, which generates a second communication burst including said negated complex conjugate of said second data field followed by said second burst midamble followed by said complex conjugate of said first data field.

10. The system of claim 9 wherein said base station includes said receiver and said UE includes said transmitter.

11. The system of claim 9 wherein said UE includes said receiver and said base station includes said receiver.

12. A transmitter which transmits data symbols in a CDMA communication system including a base station and a user equipment (UE), said transmitter comprising:

an encoder which encodes a first and second data field of symbols to produce complex conjugates of the symbols of said first and second data fields; and

a first and second antenna which transmit RF signals including a first and second communication burst, wherein said first communication burst including said first and second data fields separated by a midamble is transmitted by said first antenna and said second communication burst produced using said complex conjugates of said first and second data fields separated by a midamble is transmitted by said second antenna.

13. The transmitter of claim 12 wherein said encoder negates said complex conjugate of said second data field.

14. The transmitter of claim 13 further comprising:

a first burst generator, associated with said first antenna, which generates said first communication burst including said first data field followed by said first burst midamble followed by said second data field; and

a second burst generator, associated with said second antenna, which generates said second communication burst including said negated complex conjugates of said second data field followed by said second burst midamble followed by said complex conjugates of said first data field.

15. The transmitter of claim 14 wherein said base station includes said receiver and said UE includes said transmitter.

16. The transmitter of claim 14 wherein said UE includes said receiver and said base station includes said receiver.